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PERSONAL CHARACTERISTICS OF SCAVENGING CHICKENS HOLDERS AND THEIR BEHAVIOR AFFECTING CHICKENS REARING IN EASTERN GEZIRA STATE, SUDAN

Mutasim Ali Mohamed ELAGAB [1]

University of Gezira, Sudan

Hytham Sameer ABDELATEEF [2]

University of Gezira, Sudan

Eldaw Ahmed MOHAMED [3]

University of Gezira, Sudan

Abstract:

This study was aimed to detect the relationship between personal characteristics of the respondents and their behavior affecting scavenging chickens rearing in Eastern Gezira State, Sudan. Variables of study involved two; personal characteristics of the respondents such as (gender, age, educational level, membership of social organizations and job) and their behavior regarding chickens rearing such as (caging, feeding, selection process and chicks separation). Population is constructed of three; administrative units population, villages population and respondents population. Using the stratified sample technique, the study sample also constructed of three; administrative units sample, villages sample and respondents sample, which was selected randomly. Data were collected by using questionnaire through field interview. Statistical Package for Social Science (SPSS) was used for data analysis specifically, descriptive statistics and chi-square test. The study was concluded to the following; 43.3% of the respondents were found as chickens holders, most of them were female, moderate age, had a secondary education and above, not a member in social organizations. Respondents who reared chickens were female house holder and students, they used traditional cages, they cared about their chickens feeding, they did not cared about selection process and did not separated chicks from their mothers. Furthermore, gender is related only to chickens separation, while membership is related to caging, chickens separation and selection process. Finally, the research recommends: Attention should be offered to respondents who responsible of chickens rearing in designing special messages and programs for them. Encouragement of the respondents to engage and formulate social societies and bodies for chickens rearing and services. Encouragement of the respondents to improve and construct modern cages for better chickens rearing and protection. And orientating the respondents towards chickens separation and in selection processes for achieving better chickens rearing.

Keywords: Personal Characteristics, Scavenging Chickens Holders, Behavior, Rearing.

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[1] agabmutsim82@gmail.com

[2] hythamsameer@gmail.com

[3] ELDAWAHMED@gmail.com

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1.0. Introduction

Traditional village poultry production systems in Africa are mainly based on scavenging indigenous chickens found in almost all households in the rural areas. They are characteristically an integral part of the farming systems requiring low-inputs with outputs accessible at both inter-household and intra-household levels (Kitalyi, A.J., 1998). Poultry production systems of tropical regions are mainly based on the scavenging indigenous chickens found in virtually all villages and households in rural area. This type of chicken production is characterized by low outputs of egg and meat production per bird, but has low capital input and hence low economic risks (Olwande *et al.,* 2010). Traditional family-based production systems still contribute more than 80% of the global poultry population (Mack et al., 2005). In developing countries backyard poultry is an important part of livelihood and social needs of rural families (Sarwar et al., 2015; Weyuma et al., 2015). Backyard (scavenging) poultry farming requires low input and can be managed easily (Rath et al., 2015). Though neglected in the development themes for a long time, now a day's many researchers and development agents are becoming in to consensuses that the smallholder chicken production play a major role in poverty alleviation and food security at household level. It provides off-farm employment and income generating opportunity and source of gifts and religious sacrifices (Wethli, 1995; Sonaiya, 1990a; Gueye, 2003; Tadelle and Ogle, 2001; Sonaiya, 2000). Indigenous poultry keeping has become a custom in the villages (Barua and Yoshimura, 1997). Czech Backyard poultry-keeping is a significant livelihood activity for many poor rural families in India, and for women in particular (Conroy etal, 2005). Almost every rural family has small flocks of indigenous chickens under backyard system (Aini, 1990). Backyard poultry farming requires low input and can be managed easily (Rath et al., 2015). Through the rearing of backyard poultry, village people can fulfill their food demand as well as can get additional profit (Conan et al., 2012). Scavenging chicken also serve in waste disposal system by converting leftover of grains and human foods and insects in to valuable protein foods-egg and meat (Doviet, 2005). Rural poultry has a remarkable contribution to the development of rural families and overall development of the poultry sector. The participation of women in rural poultry improvement programs contributes to human development both by increasing access for rural women to income and knowledge and by increasing production efficiency (Aboul-Ella, 1992; Bradley, 1992). Generally, in Africa, indigenous chickens are mostly owned and managed by women and children thus forming an integral part of female-headed households (Badubi et al.,2006; Ahlers et al., 2009; Moreki, 2010). Backyard poultry farmers are low producers and they have not satisfactory knowledge of management (Alam et al., 2014). They are not aware of preventive practice (Sultana et al., 2012). lack of housing is one of the major constraints of the smallholder poultry production systems (Dwinger *et al.,* 2003). Lack of feed supplementation is one of the characteristics of a free-ranging backyard poultry production system (Gueye, 2003), feed supplements have a positive effect on egg production and body weight of scavenging birds (Sonaiya and Swan, 2004). In Sudan most chicken production, egg and meat are based on local indigenous chicken that include large baladi, bare neck and betwil type. They are distributed throughout the country, in rural areas as well as towns. Chicken production in village and rural areas, mainly based on scavenging system that characterized by low inputs and therefore low productivity. Low input in terms of housing, feeding. Disease control as well as general management low productivity include small clutch size, small egg size, small body weight, low fertility, low hatchability and high mortality rate. Most rural people who raised indigenous chicken are not keen to improve the productivity of their flock this may be due to insufficient funds and lack of the technical knowhow (training) (Desai, 1962). Several reasons for the high mortality and low productivity have been suggested, such as mismanagement, malnutrition, diseases and predation (Chrysostome *et al.,* 1995). The type and management of the chicken kept are influenced by various biological, cultural, social and economic factors prevailing in the villages and this

explains the reason why villages chicken may comprise a mixture of indigenous birds and some improved breed crosses (Aklilu *et al.*,2007).

1.1. Problem Statement:

Local chickens rearing is an ancient activity for the families in the rural areas of the Sudan and chickens products (meat and eggs) was used widely in the Sudanese meal but researches and data of indigenous chickens are few and scattered in this field, so this study comes to highlight the importance of chickens rearing for the rural households to assist them in raising their living standards.

1.2. Objectives of the research:

1.2.1. Main Objective:

To detect the relationship between personal characteristics of scavenging chickens holders and their behavior affecting chickens rearing in Eastern Gezira State, Sudan.

1.2.2. Specific Objectives:

- To identify the personal characteristics of the scavenging chickens holders such as; gender, age, educational level, membership in social organization and the current job.
- To identify the behavior of scavenging chickens holders regarding caging, feeding, selection process and chicks separation.
- To estimate the percentage of scavenging chickens rearing in the research area.

1.3. Research Variables

1.3.1. Independent Variables

These were personal characteristics of the respondents such as (gender, age, educational level , membership of social organizations and job).

1.3.2. Dependent variables

These were represented by respondents behavior towards chickens rearing such as; (caging or housing, caring about feeding, selection process of chickens breeds and chicks separation process).

1.4. Research question

Is There any relationship between respondents' personal characteristics and their behavior regarding chickens rearing?

1.5. Research Hypotheses

Null Hypothesis (Ho) = There is no relationship between respondents' personal characteristics and their behavior of chickens rearing.

Alternative Hypothesis (Ha) = There is a relationship between respondents' personal characteristics and their behavior of chickens rearing.

2.0. Research methodology

2.1. The study area

It was Eastern Gezira state, Sudan, which lies between latitudes (14:45 – 35:30) North and longitudes (33:5 – 34:15) East. The research area is boarded by Medani Elkubra and

Umm Elgora localities from the South and the Blue Nile from the West, Khartoum State from the North and Kassala and Elgadarif from the East. The research area is composed of (325) villages as follows: Rufaa city (25) districts, Ariaf Rufaa (87) villages, Elhilalia (33) villages, Tambol (128) villages and Wad Rawa unit (72) villages, Annual Report (2010).

2.2. Population of the study

Population of this study is constructed of three categories as follows; firstly: Administrative units population; the study area is consisted of five administrative units as follows; Rufaa city, Ariaf Rufaa, Elhilalia, Tambol and Wad Rawa unit. Secondly: Villages population; Three units were selected randomly from the above five mentioned, to represent units' sample, which is consisted of 190 villages representing villages population. Thirdly: Respondents population; 10 villages were selected randomly from the villages population, consisted of (3140) families representing respondents population in the study area.

2.3. Sample of the study:

Using the stratified sample techniques, the study sample constructed also of three; first: Administrative units sample; three administrative units were selected randomly based on 60% from the units population, which were; Ariaf Rufaa, Elhilalia and Tambol. Second: Villages sample; the three selected units were consisted of 190 villages, 10 villages were selected randomly to construct the villages sample based on 5% of the villages population. These villages were (Wadelfadni, Elhadaba Mustafa, Eleriabab and Eltrajma) from Ariaf Rufaa unit, villages(Elamara, Elhashishab, EddElhaj and Elobodab) from Tambol unit and villages (Eloak and Deam Elyas) from Elhilalia unit. Third: respondents sample; villages sample involves (3140) families , in order to select respondents sample , the selected village was divided geographically into four sections, 700 families were selected randomly to represent respondents sample based on 22.3%.
A primary investigation was done for the 700 families in order to determine families those who rear chickens, (303) families (43.3)% were found as chickens holders, (one person from each chickens holders family was selected to be investigated for data collection), as shown in table (1) and table (2) below.

Table (1) villages and families sample in the research area:

Admin. Unit	Villages No.	Villages sample		Village name	Families No.	Families sample	
		No.	%			No.	%
Ariaf Rufaa	80	4	5	Wadelfadni	130	57	43.9
				Elhadaba	90	66	73.3
				Eleriabab	700	66	9.4
				Eltrajma	250	76	30.4
Tambol	80	4	5	Elamara	100	49	49
				Elhashishab	300	77	25.7
				EddElhaj	350	83	23.7
				Elobodab	600	54	9
Elhilalia	30	2	5	Eloak	350	61	17.4
				Deam Elyas	270	111	41.1
Total	190	10	5		3140	700	22.3

Table (2) Percentage of scavenging chickens rearing for the respondents:

Admin. Unit	Families No.	Reared		Not reared		Researched Families	
		No.	%	No.	%	No.	%
Ariaf Rufaa	1170	132	50	133	50	265	22.6
Tambol	1350	104	39.5	159	60.5	263	19.5
Elhilalia	620	67	39	105	61	172	27.7
Total	3140	303	43.3	397	56.7	700	22.3

2.4. Data collection:

Two types of data were collected for this research (Primary data and secondary data), the first type of data were collected by using questionnaire forms, through field interviews, the questionnaire forms involve many types of questions to measure variables under investigation. While the second type of data were collected from records and references.

2.5. Data analysis:

Data were organized, coded and fed into the computer. Statistical Package for Social Science (SPSS) was used in data analysis. Two statistical tools were used in data analysis; descriptive statistics (percentage analysis and frequency distribution), in addition to chi-square test for independency (2×2 contingency table) to detect level of significance between variables of interest.

3.0. Results and discussion:

3.1. Descriptive statistics Analysis:

3.1.1. Descriptive statistics Analysis for personal characteristic variables:

Table (3) reflects results of personal characteristics of the respondents, regarding gender, it shows 53.1% of the respondents were female, while 46.9 % were male. This result agreed with Okitoi *et al* (2007) who reported that women are mainly owners of the poultry in rural poultry farming. Similar findings obtained by Sayda *et al* (2012) who reported that the females represented the highly percentage of poultry keepers in South Gezira district (77%), also similar to that reported in Nigeria, and north west Ethiopia by Abubakar *et al* (2007) and Halima (2007). In contrast Demissu *et al* (2019) in Ethiopia indicated that 87.45% household heads were male, also Muhiye (2007) reported that male account 86.3% from household in southern Ethiopia respectively. Concerning age it shows 38.0% of the respondents were young age, 44.2% of them were moderate age and 17.8% of them were old age, this result in accordance with Muhiye (2007) where he recorded that the majority of respondents in moderate age, also similar to that reported in Ethiopia by Demissu *et al* (2019). Concerning educational background of the respondents 23.8 %, 0.7%, 13.9% , 32.6% and 29% were illiterate, pre-school, primary, secondary school and university and above, respectively. this result disagreed with Demissu *et al* (2019) and Muhiye (2007) they showed that the majority of respondents were in primary cycle. 82.8 % of the respondents were not a member in social organizations in the research area compared to only 17.2 of them who were a member. Lastly, regarding respondents job it indicates that 46.6% of the respondents who cared about their chickens were female house holder followed by 30.0% of them were students, obviously the result of this variable strengths the result of variables age and gender.

Table (3) Personal characteristics of the respondents in the research area :

Variable	Category	Administrative units						Total	
		Ariaf Rufaa		Tambol		Elhilalia			
		No.	%	No.	%	No.	%	No.	%
Gender	Male	64	48.5	41	39.5	37	55.2	142	46.9
	Female	68	51.5	63	60.5	30	44.8	161	53.1
	Total	132	100	104	100	67	100	303	100
Age/ years	Young	51	38.6	34	32.6	30	44.8	115	38.0
	Moderate	56	42.5	53	51	25	37.3	134	44.2
	Old	25	18.9	17	16.4	12	17.6	54	17.8
	Total	132	100	104	100	67	100	303	100
Edu.	Illiterate	38	28.8	29	27.9	5	7.5	72	23.8
	Pre-school	0	0	1	1.0	1	1.5	2	0.7
	Primary	20	15.2	10	9.6	12	17.9	42	13.9
	Secondary	41	31.1	43	41.3	15	22.3	99	32.6
	University and above	33	24.9	21	20.2	34	50.8	88	29.0
	Total	132	100	104	100	67	100	303	100
Member - ship	Member	21	15.9	17	16.3	14	20.9	52	17.2
	Not	111	84.1	87	83.7	53	79.1	251	82.8
	Total	132	100	104	100	67	100	303	100
Job	without job	4	3.1	2	1.9	2	3.0	8	2.6
	House holder	60	45.4	55	52.9	26	38.8	141	46.6
	Student	43	32.6	30	28.8	18	26.9	91	30.0
	Free labor	15	11.4	8	7.7	10	14.9	33	10.9
	Merchant	6	4.5	2	1.9	3	4.5	11	3.7
	Farmer	2	1.5	7	6.7	4	6.0	13	4.3
	other	2	1.5	0	0	4	6.0	6	1.9
	Total	132	100	104	100	67	100	303	100

***Young age(10-25) years ** Moderate age (25-59) *** Old age (60 years & above)**

3.1.2. Descriptive statistics Analysis for behavioral variables:

Table (4) reflects results about variables such as; caging or (housing) which shows 68.7% of the respondents used traditional and primitive cages to protect their chickens compared to 31.4% of them who did not. This agrees with the findings of other studies (Demissu, 2019, and Mapiye, 2008). Regarding caring about feeding the table shows 77.9% of the respondents exert more efforts looking after their chickens feeding compared to 22.1% of them who did not. Concerning selection of chickens breeds the result indicates 92.7% of the respondents did not care about the process of selection compared to only 7.3% who did so. Concerning chicks separation the table indicates 92.7% of the respondents did not separate chicks from their mother compared to only 7.3% who did so.

Table (4) Behavior of the respondents regarding scavenging chickens rearing:

Variable		Administrative units						Total	
	Category	Ariaf Rufaa		Tambol		Elhilalia			
		No.	%	No.	%	No.	%	No.	%
Caging	Caged	88	66.7	75	72.1	45	67.2	208	68.6
	Not	44	33.3	29	27.9	22	32.8	95	31.4
	Total	132	100	104	100	67	100	303	100
Feeding	Feed	87	65.9	93	89.4	56	83.6	236	77.9
	Not feed	45	34.1	11	10.6	11	16.4	67	22.1
	Total	132	100	104	100	67	100	303	100
Selection process	Select	9	6.8	7	6.7	6	9.0	22	7.3
	Not select	123	93.2	97	93.3	61	91.0	281	92.7
	Total	132	100	104	100	67	100	303	100
Chicks separation	Separate	15	11.4	5	4.8	2	3.0	22	7.3
	Not sep.	117	88.6	99	95.2	65	97.0	281	92.7
	Total	132	100	104	100	67	100	303	100

3.2. Chi square Analysis:

3.2.1. Chi square analysis for personal characteristics variables:

Table (5) shows that; there is no significant differences between male and female regarding membership of social organizations.

Table (5) Chi square test for gender by social organization membership:

Variable		Gender		Total	Sig.
	Category	Male	Female		
Social membership	Member	23	29	52	0.175
	Not	119	132	251	
	Total	142	161	303	

Tabulated X^2 = 3.841 **Alfa level = 0.05** **df = 1** *** Sign. dif.**

3.2.2. Chi square analysis for personal characteristics by behavioral variables:

Table (6) shows that there is a significant differences between male and female in using cages for chicken rearing, in feeding and in selection process. On the other hand the table shows that, there is no significant differences between them in chickens separation.

Table (6) Chi square test for gender by behavioral variables:

Variable		Gender		Total	Sig.
	Category	Male	Female		
Caging	Caged	58	37	95	11.187
	Not	84	124	208	*
	Total	142	161	303	
Feeding	Feed	132	104	236	35.239
	Not	10	57	67	*
	Total	142	161	303	
Chicken separation	Separated	8	14	22	1.050
	Not	134	147	281	
	Total	142	161	303	
Selection process	Selected	18	4	22	11.639
	Not	124	157	281	*
	Total	142	161	303	

Tabulated X^2 = 3.841 Alfa level = 0.05 df = 1 * Sign. dif.

Table (7) shows that there is a significant differences between members and not members in caring about feeding. On the other hand; the results of the table reflects that, there is no significant differences between them in caging, in chickens separation and in selection process.

Table (7) Chi square test for social organization membership by behavioral variables

Variable		Membership		Total	Sig.
	Category	Member	Not		
Caging	Caged	17	78	95	0.052
	No cage	35	173	208	
	Total	52	251	303	
Feeding	Feed	48	188	236	7.579
	Not	4	63	67	*
	Total	52	251	303	
Chicken separation	Separated	1	21	22	2.656
	Not	51	230	281	
	Total	52	251	303	
Selection process	Selected	7	15	22	3.584
	Not	45	236	281	
	Total	52	251	303	

Tabulated X^2 = 3.841 Alfa level = 0.05 df = 1 * Sign. dif.

3.2.3. Chi square analysis for behavioral variables:

Table (8) shows that there is a significant differences between those who were used cages and those who were not in caring about their chicken feeding. On the other hand, there is no significant differences between them in chickens separation and in selection process.

Table (8) Chi square test for using cages by behavioral variables:

Variable		Using cages		Total	Sig.
	Category	Caged	Not		
Feeding	Feed	92	144	236	28.868
	Not	3	64	67	*
	Total	95	208	303	
Chicken separation	Separated	10	12	22	2.192
	Not	85	196	281	
	Total	95	208	303	
Selection process	Selected	10	12	22	2.192
	Not	85	196	281	
	Total	95	208	303	

Tabulated X^2 = 3.841 Alfa level = 0.05 df = 1 * Sign. dif.

4.0. Conclusion and recommendations:

The research concludes that, the majority of the respondents were female, moderate age (25-59) years, secondary, university and above education, not a member in social organizations ,house holders and students. Concerning their behavior most of them used cages to protect their chickens, care about their chickens feeding, did not care about the process of selection, did not separate chicks from their mothers. chi-square test reflects that; there is no significant differences between male and female in membership of social organizations. There is no significant differences between male and female in chickens separation. There is no significant differences between members and not members in caging, in chickens separation and in selection process. There is no significant differences between those who were used cages and those who were not in chickens separation and in selection process. On the other hand, there is a significant differences between male and female in using cages for chicken rearing, in feeding and in selection process. There is a significant differences between members and not members in caring about feeding. There is a significant differences between those who were used cages and those who were not in caring about their chicken feeding. So, chi-square test concludes that; There is a relationship between gender and chickens separation. There is a relationship between membership and caging, chickens separation and selection process. Finally, the research recommends the following: Extension messages regarding scavenging chickens rearing have to be designed targeting female, young and moderate age respondents, involving technical packages such as ; process of selection and chicks separation. Encouraging respondents to participate in community societies and groups, and to produce for market and home satisfaction. Encouragement of the respondents to improve and construct modern cages for better chickens rearing and protection. And orientating the respondents towards chickens separation and in selection processes for achieving better chickens rearing.

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